Curriculum Vitae
ANTONINA ROLL-MECAK

Cell Biology and Biophysics Unit
Porter Neuroscience Research Center
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Professional Appointments

2009 – present Investigator and Unit Chief, Cell Biology and Biophysics Unit, National Institute of Neurological Disorders and Stroke, National Institutes of Health, Bethesda, Maryland, U.S.A.

joint appointment, National, Heart, Lung and Blood Institute, National Institutes of Health, Bethesda, Maryland, U.S.A.

Postdoctoral Training

2003 – 2009 Postdoctoral Fellow – Department of Cellular and Molecular Pharmacology, University of California, San Francisco

Education

2002 Ph.D., Molecular Biophysics - The Rockefeller University, New York

1996 B.E., *summa cum laude*, Chemical Engineering - The Cooper Union for the Advancement of Science and Art, Albert E. Nerken School of Engineering, New York

1992 Baccalaureate with high honors, Mathematics and Physics – Gheorghe Lazar Lyceum, Sibiu, Romania

Honors and Awards

2010 – 2013 Searle Scholar Award

2006 – 2013 Burroughs Wellcome Career Award in the Biomedical Sciences

2006 – 2011 K99/R00 NIH Pathway to Independence Award

2006 Larry L. Hillblom Foundation Fellowship Grant

2006 – 2010 American Heart Association Scientist Development Award (declined)

2006 L'Oreal-AAAS For Women in Science Fellowship Award

2003 – 2006	Damon Runyon Cancer Research Fund Postdoctoral Fellowship
2000 – 2002	Burroughs Wellcome Fund Predoctoral Fellowship
1997 - 2000	National Science Foundation Predoctoral Fellowship
1997 - 1999	The Kosciuszko Foundation Fellowship Grant
1996	The Henry W. Reddick Fund Prize and Medal for meritorious work in mathematics
1996	Willliam C. & Esther Hoffman Beller Fund for merit in engineering studies
1996	*Summa Cum Laude*, Cooper Union for the Advancement of Science and Art
1992 – 1996	Full tuition scholarship from The Cooper Union for the Advancement of Science and Art
1992 - 1996	National Dean's List, The Cooper Union for the Advancement of Science and Art
1995	Sigma Xi Rudin Fellowship for Summer Research
1994 – present	Member, Tau Beta Pi National Engineering Honor Society
1993	The Cooper Union Engineering Summer Fellowship
1991	Honorable Mention, Mathematics Olympiad

Funding

2010 – 2013	Searle Scholar Award
2006 – 2013	Burroughs Wellcome Career Award in Biomedical Sciences (discontinued upon joining the NIH intramural program)
2006 – 2011	K99/R00 NIH Pathway to Independence Award (discontinued upon joining the NIH intramural program)
2008 – 2009	Larry L. Hillblom Foundation Fellowship Grant
2006 – 2010	American Heart Association Scientist Development Award (declined)

Teaching and Mentoring

Summer 2007	Teaching assistant, Physiology course - Marine Biological Laboratory, Woods Hole
2003 - 2009	Informal mentoring of rotation students in the laboratory of Professor Ronald D. Vale, University of California, San Francisco
2001 - 2003	Adjunct Professor of Biology - The Cooper Union for the Advancement of Science and Art, New York

	Independently designed and taught: Introduction to Molecular and Cell Biology; Biochemistry
2001-2002	Informal mentoring of a Summer Undergraduate Research Fellow (SURF) in the laboratory of Professor Stephen K. Burley, Rockefeller University
1993 – 1995	Undergraduate tutor, mathematics and physics - The Cooper Union for the Advancement of Science and Art, New York
1994	Independently taught lectures in Nuclear Physics – The Cooper Union for the Advancement of Science and Art, New York
1993	Teaching assistant for Quantum Mechanics - The Cooper Union for the Advancement of Science and Art, New York

Professional Activities

Member, American Society for Cell Biology Meeting Abstracts Committee

Co-organizer, NIH Research Festival Symposium: "Seeing the invisible: dissecting the mechanism of macromolecules across the scales"

Co-chair, NIH Scientific Interest Group on "Engineering and Physical Sciences"

Ad hoc reviewer: *Nature*, *EMBO J.*, *Proceedings of the National Academy of Sciences, Journal of Biological Chemistry, Journal of Cell Biology, Human and Molecular Genetics, Disease Models and Mechanisms, Biopolymers*

Member, American Society for Cell Biology

Member, Tau Beta Pi National Engineering Honor Society

Member, The American Institute of Chemical Engineers

Member, American Association for the Advancement of Science

Publications

13. Roll-Mecak, A. and McNally, F.J. Microtubule severing enzymes, 2010. *Curr. Opin. Cell Biol.*, 22(1):96-103. (joint corresponding authors).

12. Roll-Mecak, A. and Vale, R.D. Structural basis for microtubule severing by the hereditary spastic paraplegia protein spastin. 2008. *Nature*, 451(7176):363-7.

11. Roll-Mecak, A. and Vale, R.D. Making more microtubules by severing: a common theme of noncentrosomal microtubule arrays? 2006. *J. Cell. Biol.* 175 (6), 849-851.

10. Padyana, A. K., Qiu, H., **Roll-Mecak, A.**, Hinnebusch, A. G., Burley, S. K. Structural basis for autoinhibition and mutational activation of eIF2α protein kinase GCN2. 2005. *J. Biol. Chem.* 280(32), 29289-29299.

9. Roll-Mecak, A. and Vale, R. D. The Drosophila Homologue of the Hereditary Spastic Paraplegia Protein, Spastin, Severs and Disassembles Microtubules. 2005. *Curr. Biol.* 5(7), 650-55.

8. Roll-Mecak, A., Alone, P., Cao, C., Dever, T. E., and Burley, S. K. X-ray structure of translation initiation factor eIF2γ: implications for tRNA and eIF2α binding. 2004. *J. Biol. Chem.* 279(11), 10634-10642.

7. Shin, B-S., Maag, D., **Roll-Mecak, A.**, Arefin, S.M., Burley, S.K., Lorsch, J.R., and Dever, T.E. Uncoupling the GTPase and Translational Activity of Initiation Factor eIF5B/IF2 by Mutations that Lower Ribosome Affinity. 2003. *Cell* 111, 1015-1025.

6. Deaconescu, A.M., **Roll-Mecak, A.**, Bonanno, J.B., Gerchman, S. E., Kycia, H., William, B.F., and Burley, S.K. X-ray Structure of Saccharomyces Mitochondrial Matrix Factor 1 (Hmf1). 2002. *Proteins* 42(2), 431-436.

5. Dever, T.E., **Roll-Mecak, A.**, Choi, S.K., Lee, J.H., Cao, C., Shin, B-S., and Burley, S.K. The Universal Translation Initiation Factor IF2/eIF5B. 2001 *Cold Spring Harbor Symp. Quant. Biol.* 66, 417-424.

4. **Roll-Mecak, A.**, Shin, B-S, Dever, T.E., and Burley, S.K. Engaging the ribosome: Universal IFs of translation. 2001. *Trends Biochem. Sci.* 26(12), 705-709.

3. **Roll-Mecak, A.**, Cao, C., Dever, T.E., and Burley, S.K. X-ray structures of the Universal Translation Initiation Factor IF2/eIF5B: Conformational Changes on GDP and GTP Binding. 2000. *Cell* 103, 781-792.

2. Choi, S. K., Olsen, D.S., **Roll-Mecak, A.**, Martung, A., Remo, K. L., Burley, S. K., Hinnebusch, A. G., and Dever, T. E. Physical and functional interaction between the eukaryotic orthologs of prokaryotic translation initiation factors IF1 and IF2. 2000. *Mol. Cell. Biol.* 20, 7183-7191**.**

1. Lee, J.H., Choi, S.K., **Roll-Mecak, A.**, Burley, S. K., and Dever, T. E. Universal conservation in translation initiation revealed by human and archaeal homologs of bacterial translation initiation factor IF2.1999. *Proc. Natl. Acad. Sci. USA.* 96, 4342-4347.

Selected Invited Talks

2010 – National Institute of Diabetes and Digestive and Kidney Diseases, Laboratory of Biochemistry and Genetics
2010 – National Cancer Institute, Cell Metabolism Branch
2010 - 40th MidAtlantic Protein Crystallography Meeting, Baltimore
2010 - University of Delaware, Department of Chemistry and Biochemistry
2009 - National Heart, Lung and Blood Institute, Laboratory of Cell Biology
2009 - National Cancer Institute, Laboratory of Macromolecular Crystallography
2009 - Drexel University, Department of Neurobiology
2008 - Yale University, Department of Molecular Biophysics and Biochemistry

2008 – National Heart, Lung and Blood Institute, NIH, Biophysics Center
2008 - University of Chicago, Department of Cell and Molecular Biology
2008 - University of Washington, Biochemistry Department
2008 – National Institute of Neurological Disorders and Stroke, NIH
2008 - Northwestern University, Department of Biochemistry, Molecular Biology and Cell Biology
2008 - University of Colorado, Department of Molecular, Cellular and Developmental Biology
2008 - Laboratory of Molecular Biology, MRC, Cambridge
2008 - Johns Hopkins School of Medicine, Department of Molecular Biology and Genetics
2008 - The Vollum Institute for Advanced Biomedical Research
2008 - University of Wisconsin, Madison, Department of Biochemistry
2008 - Fred Hutchinson Cancer Research Center, Basic Sciences Division
2007 - University of California, Santa Cruz, Department of Chemistry and Biochemistry
2007 – National Institute of Child Health and Development, NIH, Laboratory of Gene Regulation
2006 - Institute of Molecular Biology, Academia Sinica, Taipei
2006 - Weill Medical College of Cornell University, Department of Physiology and Biophysics
2003 - Institute for Molecular Pathology, Vienna,
2003 - Mount Sinai School of Medicine, New York
2003 - Georgetown University, Department of Biology
2002 - International Union of Crystallography Congress, Geneva
2002 - Brooklyn Polytechnic, Bio-optics course
2002 - Stanford University, Department of Biochemistry
2002 - Yale University, Department of Molecular Biophysics and Biochemistry
2002 - University of California at Berkeley, Department of Molecular and Cell Biology
2001 - University of Aarhus, Department of Molecular Biology
2001 - National Institute of Child Health and Development, NIH, Division of Eukaryotic Gene Regulation
2001 - Wadsworth Center, Albany